

VIRGINIA ASSOCIATION OF SCIENCE TEACHERS 2022 PROFESSIONAL DEVELOPMENT INSTITUTE

FRIDAY AFTERNOON CONCURRENT SESSION PRESENTATIONS

(This list and an Index of Presenters are on the WHOVA APP and on the Annual PDI page at www.VAST.org/2022pdi)

(Last minute cancellations are on the WHOVA APP)

Fri. noon-1:00 PM, Room 18 (second floor), **Grade:** ALL GRADES, **Content:** Pre-service Teachers

33. Exclusively for Pre-service Teachers - What YOU Need to Know

Jennifer Maeng, University of Virginia

Calling all pre-service teachers! Join us learn how VAST can launch you into your career as a science teacher. Whether this is your first time attending VAST or your third, this session has something for you! Make connections with fellow preservice teachers and others that can support your career whether just you're beginning a teacher preparation program or graduating in May!

Session 3: Fri. 1:10-2:00 PM, Amphitheatre (first floor), **Grade:** ALL GRADES, **Content:** General

34. VDOE Update

Anne Petersen, Virginia Department of Education

Gregory MacDougall, Virginia Department of Education

Myra Thayer, Virginia Department of Education

The VDOE Update will provide educators information on current state initiatives and opportunities in science education through the Department of Education.

Session 3: Fri. 1:10-2:00 PM, Room D (first floor), **Grade:** MS-HS, **Content:** Math in Science, General, STEM

35. Infect Your Science Classroom with Math!

Jeff Lukens, Roosevelt High School, Sioux Falls, SD

Data collection and analysis is not only easier and more accessible than ever, it MUST be a part of any solid science curriculum.

In this session, we will be using state-of-the-art technology that is designed to facilitate effective data collection and analysis in any MS or HS science classroom. We will be analyzing the data by developing mathematical models using the data, and then brainstorming ideas for how to integrate writing into the activities that are done in the lab.

Session 3: Fri. 1:10-2:00 PM, Central Lounge (first floor), **Grade:** ELEM, **Content:** STEM

36. Coding for the Ages

Pam Caffery, hand2mind

We'll explore hand2mind's offline coding solutions that will build foundational skills for academic success and can be integrated across your 3-dimensional lessons. Four stations will be arranged where teachers can explore various offline coding activities, learn how to integrate them into instruction, and discover ways coding is beneficial for students. (Commercial Exhibitor)

Session 3: Fri. 1:10-2:00 PM, Room 2-3 (first floor), **Grade:** ALL GRADES, **Content:** Env Sc through STEM Apply

37. Exploring Renewable Energy Resources Available Throughout VA

Remy Pangle, James Madison University Center for the Advancement of Sustainable Energy

Pam Northam, Non-Profit Educator

Dawit Haile, Virginia State University

The Center for the Advancement of Sustainable Energy (CASE) at JMU is a leader in renewable energy education (REE) and has a state-wide reach. However, limitations make it difficult to provide services and resources equally throughout VA. In this session, educators will engage in wind and solar energy activities/kits that are available throughout the state through new partnerships with ODU and VSU for FREE by utilizing the lending library network. (Not-For-Profit Exhibitor)

Session 3: Fri. 1:10-2:00 PM, Room AB (first floor), **Grade:** MS, **Content:** STEM

38. Exploring OpenSciEd from Carolina

Cheryl Lindeman, Carolina.com

Come experience a model lesson from OpenSciEd for Middle School and see how the new Carolina Certified Edition makes this high-quality instructional material even better! Experience the pedagogy of OpenSciEd through a model lesson, learn ways to encourage equitable classroom discourse, and create a driving question board to explore real-world phenomena. Learn about the flexible all-inclusive options for complete kits and using Carolina Science Online. Leave with classroom resources.

(Commercial Exhibitor)

Session 3: Fri. 1:10-2:00 PM, Room 4 (first floor), **Grade:** MS-HS-COL, **Content:** General

39. Grading for Equity: Summative and Standards-Based Assessment

Mollianne George, Fairfax County Public Schools

A high school teacher will share lessons learned from her transition to summative and standards-based grading in the science classroom. Examples and strategies will be given to help participants move to these equity-focused practices. Participants are encouraged to bring their content standards and any assessments they would like to adapt during the small group work time.

Session 3: Fri. 1:10-2:00 PM, Room 16 (second floor), **Grade:** HS-COL, **Content:** Environmental Science, Engineering, Authentic Student Research

40. HABR - High Altitude Balloon Research

Andrew Jackson, Harrisonburg City Public Schools

Seth Shantz, Harrisonburg City Public Schools

Erich Sneller, Harrisonburg City Public Schools

Students in the Program, Harrisonburg High School

Hear students and staff present findings from their latest High Altitude Balloon Research. Student designed and executed research where the discipline doesn't matter and the inquiry is real! We'll share our findings, trials, tribulations, and successes and show you how you can get your program off the ground.

Session 3: Fri. 1:10-2:00 PM, Room I (second floor), **Grade:** ALL GRADES, **Content:** Earth/Space Science, Biology/Life Science, Chemistry

41. Explore Solar System & Beyond: NASA Astrobiology

Anne Weiss, NASA Langley Office of STEM Engagement

NASA recently confirmed the existence of over 5,000 exoplanets orbiting other stars in our Milky Way galaxy, greatly expanding our conception of our place in the universe. What are exoplanets made of? Do they have atmospheres? Could they harbor life? In this session, we'll explore how one hunts for habitable planets, what has been discovered so far, and what that data suggest about Earth's planetary history and the familiar (and not so familiar) life forms that call this blue planet home.

Session 3: Fri. 1:10-2:00 PM, Room 17 (second floor), **Grade:** HS-COL, **Content:** Biology/Life Science, Chemistry, Environmental Science

42. Probeware for Biology and Chemistry Labs

Paul Reibach, Colonial Forge High School and Commonwealth Governor's School

Various examples of probeware data collection and analysis will be presented. The focus will be on experiments related to HS biology and chemistry, and AP environmental science. Activities aligned with the new AP Project based learning initiative for environmental science will be presented.

Session 3: Fri. 1:10-2:00 PM, Room J (second floor), **Grade:** MS-HS-COL, **Content:** General, STEM, Project-based Learning

43. Next Level Learning with Interactive STEM Cases

Jenna Mercury, ExploreLearning

Let's provide our students with more in-depth, practical, concepts and practices to promote STEM career-readiness! Interactive STEM Cases will empower our students to jump into the role of a STEM professional tasked to solve real-world problems. Participants will view interactive case studies, form and test ideas and find solutions. There are so many problems in our world, but we can work together, scientifically, to solve them! (Commercial Exhibitor)

Session 3: Fri. 1:10-2:00 PM, Room 18 (second floor), **Grade:** MS-HS, **Content:** Earth/Space Science, Biology/Life Science, Environmental Science

44. Engaging Inquiry: Pre-service Teachers Share Tested Lessons

Elizabeth Edmondson, Virginia Commonwealth University

Do you want to wow your students? Do you need to inject some pizzazz into your instruction? Attend our session where secondary science preservice teachers will share inquiry-based, hands-on lessons in this interactive session. You will have an opportunity to see and participate in these classroom tested activities.

Session 3: Fri. 1:10-2:00 PM, Room H (second floor), **Grade:** MS-HS-COL, **Content:** Biology/Life Science, Chemistry, Environmental Science

45. Coastal Acidification in the Classroom

Sarah Nuss, Chesapeake Bay National Estuarine Research Reserve - VA

Anna Caputo, Virginia Institute of Marine Science

Increased atmospheric CO₂ is the primary driver of ocean acidification in surface ocean waters, but the coastal oceans and estuaries experience additional processes that play a role in changing water chemistry. Come and learn about a new coastal acidification module for secondary science teachers in the Mid-Atlantic, including teacher background, chemistry and biology lesson plans, and authentic data to use in the classroom. (Not-for-Profit Exhibitor)

Session 3: Fri. 1:10-2:00 PM, Room 15 (second floor), **Grade:** ELEM, **Content:** General, STEM, ELA and Reading Integration

46. Use Literacy & Writing Elements to Enhance Science Lessons

Chelsea Chandler, STEMscopes by Accelerate Learning

Come learn how to use effective literacy strategies so that students can better understand science content. Help students successfully analyze, discuss, and summarize science text. Student understanding and critical-thinking skills will improve with these techniques. Join our constructivist approach that promotes literacy in the science classroom. (Commercial Exhibitor)

Session 3: Fri. 1:10-2:00 PM, Room 11 (second floor), **Grade:** ELEM-MS, **Content:** Earth/Space Science, STEM

47. NASA Inventions = Living Like Astronauts

Heather Carberry, Edward E Drew Middle School

Rebecca Garrett, Edward E Drew Middle School

Jeremy Utt, T Benton Gayle Middle School

Space is dubbed the final frontier, but how does the space industry apply to our everyday lives? In more ways than you might think. In this session we will explore how NASA inventions are used in everything from our cell phones to our beds. Teachers will explore the resources that NASA has to share their innovations with students in an interactive QR gallery activity.

Session 3: Fri. 1:10-2:00 PM, Room 10 (second floor), **Grade:** ELEM-MS, **Content:** General

48. Better Together: Hands-on Science and Active Literacy

Kim Dye, School Specialty

Discover flexible lessons that meet VA SoLs for Science AND support your students' non-fiction reading skills. Join us for an active session exploring how to engage your students in the Scientific and Engineering Practices (Leaves) embedded in interactive investigations supported with rich science reading resources in four reading levels. (Commercial Exhibitor)

Session 3: Fri. 1:10-2:00 PM, Room 8 (second floor), **Grade:** HS, **Content:** Physics/Physical Science

49. VA Instructors of Physics: Tabletop Physics Demos and Activities

Seth Berkeley, Harrisonburg High School

A showroom of Physics demonstrations, activities, and ideas shared by other Physics teachers. Walk around the room as Physics teachers show off Physics resources that have worked for them or see new ideas invented and perfected by classroom professionals. Engage in meaningful discussions with others who share your passion for teaching Physics!

Session 4: Fri. 2:15-3:05 PM, Amphitheatre (first floor), **Grade:** ALL GRADES, **Content:** General

50. State Assessments and the 2018 Science Standards of Learning

Anne Petersen, Virginia Department of Education

Tyler Waybright, Virginia Department of Education

Myra Thayer, Virginia Department of Education

The 2018 Science Standards of Learning are expected to be taught and assessed throughout Virginia Schools. Learn how the 2018 standards expectations will be reflected in the state mandated assessments and how to best prepare students to take this assessment.

Session 4: Fri. 2:15-3:05 PM, Room D (first floor), **Grade:** ALL GRADES, **Content:** General

51. How To Teach Like Peter Pan

Erin Watson, York County Public Schools

Peter Pan taught us to never grow up, and it's time to bring that love of play into the classroom! During this session, you will learn how to use everyday toys to teach scientific concepts in your classroom. Experience lessons through the eyes of your students as you find the joy and learning potential in playing with toys and applying them to scientific principles. It's time to remind ourselves that playtime is for everyone!

Session 4: Fri. 2:15-3:05 PM, Central Lounge (first floor), **Grade:** ELEM, **Content:** STEM

52. Phenomenal Hands-on Kits

Pam Caffery, hand2mind

We'll explore how to use hand2mind's STEM Make It Take It kits to explore and investigate a phenomenon. Participant's will dive into a hands-on activity and record observations. We'll discuss strategies to connect the activity to the phenomenon and support students' sense-making. We'll share ideas and suggestions for other ways to use these amazing kits. Participants can register for a giveaway. (Commercial Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room 2-3 (first floor), **Grade:** ELEM-MS, **Content:** Biology/Life Science, Math in Science, STEM

53. Level Up Standards-based Content with Game-Based Learning!

Joselyn Whetzel, Legends of Learning

Brooke Fields, Legends of Learning

Why do we ask teachers to use hands-on, interactive techniques in the classroom? Because they tap into the natural human instinct to learn through experience. Gaming is a powerful medium that creates excitement, generates engagement, and builds confidence.

Legends of Learning employs original research to drive student performance using games. In this session, we discuss how to integrate a game-based learning platform into your curriculum to give your students the superpower of knowledge! (Commercial Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room AB (first floor), **Grade:** MS-HS-COL, **Content:** Biology/Life Science, Chemistry, Physics/Physical Science

54. Transforming How You Teach Science

Eric Rhoades, Pivot Interactives

Creating active engagement in your science classroom doesn't have to be time-consuming or difficult. You don't need to settle for teaching science with slides, lectures, and traditional lab experiments alone. Give your students unlimited scientific exploration with Pivot Interactives. Learn first-hand how this flexible teaching tool can engage your students and allow you to offer quick feedback to students in order to accelerate learning. (Commercial Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room 4 (first floor), **Grade:** ALL GRADES, **Content:** Earth/Space Science, Environmental Science

55. Earth Science of the Southeast: Free Online Interactive Text

Don Haas, The Paleontological Research Institution

Jonathan Hendricks, The Paleontological Research Institution

Explore the Earth science of the southeastern United States, with special attention given to Virginia, including its geologic history, rocks, fossils, topography energy, mineral resources, climate and Earth hazards. PRI's regional Earth science guides, are part of a suite of online free textbooks developed with funding from the National Science Foundation.

Session 4: Fri. 2:15-3:05 PM, Room 16 (second floor), **Grade:** ALL GRADES, **Content:** Chemistry, Physics/Physical Science

56. Ooh's & Aah's of Energy Transformations

Emily Hawbaker, National Energy Education Development Project

Explore six, hands-on stations: motion, sound, thermal, radiant, electrical and chemical energy! Using items encountered in our daily lives – glow sticks, hand warmers, batteries, etc. – but often have little understanding of the science behind how they work. Leave feeling confident to teach energy forms & transformations to your students. (Not-For-Profit Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room I (second floor), **Grade:** ALL GRADES, **Content:** Earth/Space Science

57. Earth Science Data Resources for Multilingual Learners

Angela Rizzi, NASA Langley Research Center

Desiray Wilson, NASA Langley Research Center

Are you ready to use Earth science resources that serve all of your students, especially your multilingual learners? Join us as we model the use of the new and improved My NASA Data - Literacy Cube resources made for teachers, by teachers, to build data analysis and interpretation skills. The cubes are suitable for in-person and virtual learning and are used with remotely sensed NASA Earth science data. The question prompts provided are leveled by Lexile and language proficiency levels (WIDA). (Not-For-Profit Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room 17 (second floor), **Grade:** HS-COL, **Content:** Biology/Life Science

58. Real CRISPR Gene Editing and PCR Genotyping!

Tamica Stubbs, Bio-Rad Explorers

Dig into CRISPR, a revolutionary technology in gene therapy. Participants will learn about a classroom CRISPR lab activity with robust controls and a free paper model. During the workshop, teachers will engage in a lab activity in which real CRISPR gene editing is performed via bacterial transformation and then analyze PCR amplicons to model confirmation of the chromosomal edit via PCR. They will also receive a free paper model to teach the function of Cas9, a key protein in CRISPR technology. (Commercial Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room J (second floor), **Grade:** ELEM, **Content:** General, STEM

59. Now Trending: Science Simulations to Make Things Stick!

Jenna Mercury, ExploreLearning

Everyday events make us wonder. Some events are easily explained, while others cannot. When these events are examined and tested through virtual simulations, they give students an opportunity to think. Why do some objects float and others sink? What is the difference between a solar eclipse and a lunar eclipse and how often does that happen? Learn how to use virtual simulations to help students dig deeper and get inspired by science and STEM phenomenon! (Commercial Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room 18 (second floor), **Grade:** ALL GRADES, **Content:** STEM

60. Choose Your Own Robotics Adventure!

Naomi Hartl, School Specialty LLC/Frey Scientific

Integrating robotics into your programs can help you deliver an exciting STEAM learning experience! Join this hands-on "choose your own adventure" session and decide which popular robotic products and programs you want to learn more about. Come prepared to play and explore! Bring your own device (computer, tablet, smart phone) to use during the presentation. (Commercial Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room H (second floor), **Grade:** ALL GRADES, **Content:** Environmental Science, Math in Science, STEM

61. Providing Equitable Access to STEM Skills and STEM Careers

Erin Dlott, EVERFI

Teagan Seeley, EVERFI

School leaders and district administrators are invited to join the EVERFI team to hear strategies and gain access to resources designed to increase accessibility for all students to acquire the STEM skills needed in our evolving job market. Attendees will also learn about ways they can tap into powerful networks of industry partners who are eager to provide engagement opportunities to Virginia students, including career panels, work-based learning events, job-shadowing, classroom visits and more. (Commercial Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room 15 (second floor), **Grade:** ELEM-MS, **Content:** Engineering, STEM

62. Engaging Student Engineers: Designs for Your Sci Classroom

Chelsea Chandler, STEMscopes by Accelerate Learning

Engineering design challenges provide the authentic application of science concepts in your classroom! Come learn structures and strategies that will encourage critical thinking and problem solving through the Engineering Design Process. (Commercial Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room 11 (second floor), **Grade:** ELEM, **Content:** Engineering, STEM

63. Reconnecting STEM with Science Standards for Elementary

Kimberly Rice, Five Ponds Press

Learn how to integrate elementary science standards with STEM activities. An emphasis will be placed on incorporating the engineering design process and the 5 C's to your lessons. Attendees will be presented with several sample cross-curricular STEM activities and will discuss the science standards that can be reviewed and strengthened with the given activity. Participants will be given the supplies and time to complete sample STEM challenges. (Commercial Exhibitor)

Session 4: Fri. 2:15-3:05 PM, Room 10 (second floor), **Grade:** ALL GRADES, **Content:** Earth/Space Science, Environmental Science

64. The Virginia Cave Board: Resources for Teaching Karst!

Russell Kohrs, Virginia Cave Board

The Virginia Cave Board is a governor appointed group of individuals tasked with providing guidance to citizens and Virginia government on matters related to karst. The VCB also provides valuable resources to Virginia educators, including "Project Underground" and "Virginia Cave Week". Come learn what it's like to serve on such a board and get a chance to see what kinds of offerings the board has for your classroom.

Session 4: Fri. 2:15-3:05 PM, Room 8 (second floor), **Grade:** MS-HS, **Content:** Physics/Physical Science

65. VA Instructors of Physics: Physics Ideas Shareathon

Seth Berkeley, Harrisonburg High School

Teachers from the Virginia Instructors of Physics (VIP) will share proven ideas, demonstrations, and resources for the Physics classroom. This will appeal to both High school and Middle school teachers. It is an open session, if you have an idea that you would like to share bring 20 handouts and share with us. We want to hear your ideas!

Session 5: Fri. 3:20-4:10 PM, Amphitheatre (first floor), **Grade:** HS-COL, **Content:** Physics/Physical Science

66. Newton's Laws and the Conservation of Momentum

Tatsu Takeuchi, Virginia Tech Department of Physics

The explanation of Newton's Laws found in textbooks are often confusing and even misleading. This is particularly true of Newton's 3rd Law, which is frequently misquoted in the media. In this talk, I would like to clarify that Newton's 1st and 3rd laws together are equivalent to momentum conservation, and that Newton's 2nd law is the definition of "force."

The problems with the terminologies "action" and "reaction" will be explained and why they have been omitted from the latest SOL.

Session 5: Fri. 3:20-4:10 PM, Room D (first floor), **Grade:** MS, **Content:** Biology/Life Science

67. Life Science Liveliness

Erin Watson, York County Public Schools

Craig Doolittle, Williamsburg / James City County Public Schools

Are you looking for ways to get students engaged in what they are learning in life science? Join us as we share with you some creative lessons to help you do just that! First up, switch up your typical cell models by bringing your laptops and learn how to use Minecraft Education to explore and build cells and organelles. Then, bring your creativity to the table as you use Punnett Square spinners to build your very own baby dragon. It's time to liven up our life science lessons!

Session 5: Fri. 3:20-4:10 PM, Central Lounge (first floor), **Grade:** ALL GRADES, **Content:** General

68. Trailblazing Ideas for Re-imagining Education

Cindy Duncan, Independent Consultant

How can students, teachers and administrators work smarter and not harder in an ever changing educational landscape that transforms not only their school, but community? Come learn about a framework that demonstrates how integrating sustainability and systems thinking into leadership; culture and climate; can engage all in the learning process that fosters a better future for all. Come prepared to brainstorm and share ideas to Re-Imaging Education.

Session 5: Fri. 3:20-4:10 PM, Room 2-3 (first floor), **Grade:** ELEM, **Content:** Engineering, STEM

69. Teaching Elementary Engineering Lessons Across Disciplines

Kristie Gutierrez, Old Dominion University

Jennifer Kidd, Old Dominion University

Minjung Lee, Old Dominion University

Elementary preservice teachers (PSTs) and engineering students, both from Old Dominion University (ODU), collaboratively designed and taught engineering lessons to elementary students using the 5E instructional model. In this session ODU PSTs and faculty will share more about the engineering/education partnership, provide attendees with innovative lesson plans that address SOLs in multiple subject areas, and guide attendees through a sample engineering lesson for upper-elementary students.

Session 5: Fri. 3:20-4:10 PM, Room AB (first floor), **Grade:** ELEM, **Content:** Computer Science in the Classroom

70. "What the Flow is Going On?" -- All About Flowcharts

Georgette Willis, Park Ridge Elementary School

Debbie Novalski, Park Ridge Elementary School

Incorporate flowcharts into any subject area. Engage students into exploring the world of flowcharts. Flowcharts are a great visual aid for understanding various concepts across all content areas. Incorporate a hands-on design process that gives way to collaboration and creative thinking and design. You will walk away with the understanding of a flowchart along with a computer science hands-on approach to utilize within all subject areas and with all students.

Session 5: Fri. 3:20-4:10 PM, Room 4 (first floor), **Grade:** ALL GRADES, **Content:** General

71. Get Involved with JVSE! There Is Room for Everyone!

Jennifer Maeng, University of Virginia

Did you know that publishing an article can be used toward teacher re-licensure points? Or that when you review a journal article submission you can include this on your resume as professional service? This session will help all members get involved with VAST's journal by publishing their own work or reviewing submitted manuscripts. Session attendees will brainstorm an idea for an article and work with the journal editors in developing an outline for their own publication.

Session 5: Fri. 3:20-4:10 PM, Room 16 (second floor), **Grade:** HS, **Content:** Environmental Science

72. Hands-on with Climate Science

Emily Hawbaker, National Energy Education Development Project

Join this hands-on session to learn activities for students that better equip them to visualize climate as a system, how carbon cycles throughout the Earth's systems, and how CO₂ speeds up the transfer of thermal energy. These hands-on lessons are meant to help distill a fairly complex and heavily politicized topic down to a level that students can understand and comprehend, providing them with simulations and informational texts. (Not-For-Profit Exhibitor)

Session 5: Fri. 3:20-4:10 PM, Room I (second floor), **Grade:** HS, **Content:** Chemistry

73. Clearing the Air: Addressing Misconceptions about Gases

Tyler St. Clair, Longwood University

Benjamin Campbell, Longwood University

This session is intended for high school chemistry teachers. Participants will explore a variety of gas and kinetic molecular theory demos in order to learn how to address the most common student misconceptions about gases. Demos include the collapsing aluminum can, the candle under glass, and calculating moles or grams of a gas formed during a chemical reaction.

Session 5: Fri. 3:20-4:10 PM, Room 17 (second floor), **Grade:** MS-HS, **Content:** Biology/Life Science, STEM

74. Science in Motion

Michelle Grooms, Texas Instruments

Explore pedigrees & introduce dichotomous keys through the use of a robotic vehicle. Take your science classroom to a new dimension of learning. (Commercial Exhibitor)

Session 5: Fri. 3:20-4:10 PM, Room J (second floor), **Grade:** ALL GRADES, **Content:** Biology/Life Science, Environmental Science, Math in Science

75. Using Bird Data to Meet Living Systems & Processes Standards

Bill Williams, Virginia Society of Ornithology, Virginia Junior Academy of Science

Participants will be introduced to the wide variety of available bird related data and programs that be can applied to meet nature of science goals through explorations of local living systems and processes. Key to this is the development of effective questions and the kinds of data can be used to derive potential answers. (Not-For-Profit Exhibitor)

Session 5: Fri. 3:20-4:10 PM, Room 18 (second floor), **Grade:** MS-HS, **Content:** Earth/Space Science

76. Earth Science Capstone Project: An Alternative Assessment

Laura Perrine, Lynnhaven Middle School

Purpose: To display students mastery of Earth Science content and their ability to apply it to current events.

Students prepare a 5 paragraph paper about what they have learned in three sub subjects in Earth Science. The paper will reflect on how these subjects affect the student's life.

Then students create a a power point on an assigned topic in Earth Science. It must include relevant news or developments on the subject.

Session 5: Fri. 3:20-4:10 PM, Room H (second floor), **Grade:** MS, **Content:** Biology/Life Science

77. Evolution! It's All in the Family!

Christopher Moran, The Teacher Institute for Evolutionary Science

The Teacher Institute for Evolutionary Science helps teachers teach evolution with confidence. Participants will receive a free unit of standards-aligned materials, including many active learning ideas.

Session 5: Fri. 3:20-4:10 PM, Room 15 (second floor), **Grade:** ELEM, **Content:** STEM + the ARTS = STEAM

78. STEAM-infused Instruction Gives Agency to All Learners

Susan Bardenhagen, AIAA & SWE Educator Associate

Scientists, technologists, and engineers identify that our future workforce needs critical and innovative thinking. Artists acknowledge that creative efforts are influenced by inquiry and the design process. Purposeful integration has a synergistic effect, infusing students' cultural backgrounds strengthens learning. The presentation will provide research support, involve the participants in creating activities, and attendees will receive kits of repurposed materials to set-up activities.

Session 5: Fri. 3:20-4:10 PM, Room 11 (second floor), **Grade:** MS, **Content:** Engineering, STEM

79. Reconnecting STEM with Science Standards for Middle School

Kimberly Rice, Five Ponds Press

Learn how to integrate sixth grade, life science, and physical science standards with STEM activities. The given sample lessons will highlight the engineering process along with the 5 C's. Attendees will be presented with several sample STEM activities that are appropriate for integration with science standards that can be reviewed and strengthened with the given activity.

Participants will be given the supplies and time to complete sample STEM challenges. (Commercial Exhibitor)

Session 5: Fri. 3:20-4:10 PM, Room 10 (second floor), **Grade:** ALL GRADES, **Content:** Earth/Space Science

80. Geovirtual Reality Field Experiences

Russell Kohrs, Massanutten Regional Governor's School for Environmental Science and Technology

Do you want to take your students to cool classic spots of geological importance like Mt. St. Helens but know that it's really impossible to do that? Geovirtual Reality can make this happen! Come and learn how to create VR experiences for your students that will really take them places.

Session 5: Fri. 3:20-4:10 PM, Room 8 (second floor), **Grade:** ALL GRADES, **Content:** Physics/Physical Science, STEM

81. ICON A5 Introduction to Flight Program

Betty Wilson, Virginia Department of Aviation

The ICON A5 Introduction to Flight Program is offered by the Virginia Department of Aviation. It includes an opportunity for Virginia schools to request an onsite visit by a light sport aircraft that is transported to the school by trailer. This presentation will explain the program as well as other DOAV programs, such as teacher's grants, offered by the agency. In addition, teachers in attendance will be able to put together and fly the same balsa gliders as ICON program students. (Not-For-Profit Exhibitor)

Session 6: Fri. 4:25-5:15 PM, Amphitheatre (first floor), **Grade:** ALL GRADES, **Content:** General

82. Thirty Years of Formal Learning: A Personal Journey

Timothy Bill, Harrisonburg High School

I have spent 30 years of my life in a formal learning environment. From K12 to college to medical school to a plastic surgery residency to a hand surgery fellowship to the MAT program at JMU, I have been the recipient of wisdom passed down by countless educators. At the time of this presentation, I will be three months into what I hope will be a long career teaching high school science. It is time to share my many years of learning with 21st-century students and my journey with this audience.

Session 6: Fri. 4:25-5:15 PM, Room D (first floor), **Grade:** MS-HS, **Content:** General

83. PAEMST Information Session

Gregory MacDougall, Virginia Department of Education

Anne Petersen, Virginia Department of Education

The Presidential Award of Excellence for Mathematics and Science Teachers (PAEMST) is one of the most prestigious awards a teacher can receive. This year's PAEMST application is open to middle and high school science, mathematics, engineering, and computer science teachers. If you are interested in applying, this session is a must!

Session 6: Fri. 4:25-5:15 PM, Central Lounge (first floor), **Grade:** ALL GRADES, **Content:** Biology/Life Science, Environmental Science, STEM

84. Chesapeake Bay Foundation - Education Programs

Cindy Duncan, Chesapeake Bay Foundation

Kathleen Davis, Chesapeake Bay Foundation

We're back! CBF Education is resuming all education programs. Learn about the one-day and multi-day field programs for students and teachers, professional development opportunities for teachers and school leaders and find out how to get outside with and learn about the Chesapeake Bay, its rivers, and streams. Come join us to learn about all the programs for students, teachers and administrators.

Session 6: Fri. 4:25-5:15 PM, Room 2-3 (first floor), **Grade:** ALL GRADES, **Content:** Earth/Space Science

85. The Backyard Mystery: How to Discover My Geologic History

Chris Kaznosky, Central High School

Steve Leslie, James Madison University

A student brings you a rock or fossil and asks you how to identify it. Panic sets in. What do you do? In this session, you'll learn how to use a variety of hard copy and online tools to determine a rock or fossil's age, name, and paleogeography as well as additional clues it can provide to the source area's geologic history. Although the focus will mainly be on Virginia, you'll also learn how to explore beyond. Hand samples and digital resources aligned with SOL content will be provided.

Session 6: Fri. 4:25-5:15 PM, Room AB (first floor), **Grade:** ALL GRADES, **Content:** General

86. Gimkit: Fun for Them, Information for You

Paul Bielema, Noel C Taylor Learning Academy

This presentation will be showcasing the uses of Gimkit, various ways to create your own gimkit, and assessment information you can glean from them. Gimkit provides a solid platform for reviewing, remediating, and preparing for Sols. A free pro membership door prize will be awarded to our final gimkit winner.

Session 6: Fri. 4:25-5:15 PM, Room 4 (first floor), **Grade:** HS-COL, **Content:** General, STEM

87. College and University Science Educators Share Session

Jennifer Maeng, University of Virginia

Anne Petersen, Virginia Department of Education

Sarah Nuss, Virginia Institute of Marine Science

This session is an opportunity for college/university-based science educators and other teacher educators to participate in a professional learning community. We'll begin the session with updates from each institution, then Dr. Anne Peterson, from VDOE, will share relevant information from VDOE including opportunities around the Commonwealth and resources that to use with pre-service teachers.

Session 6: Fri. 4:25-5:15 PM, Room 16 (second floor), **Grade:** MS-HS, **Content:** Earth/Space Science, Biology/Life Science, Environmental Science

88. BayQUEST

Paul Sarandria, Manor High School

Cami Field, Churchland High School

Come join us to learn how we used field experiences to explore the Chesapeake Bay.

A group of 12 students were selected who demonstrated an interest in science to be a part of this field-exploration, hands on camp. During the camp, students explored and compared ecosystems of the Chesapeake Bay, visited historic cultural sites, met with scientists, experienced key geological features defining the Bay, and experienced the oldest to newest technologies of the maritime commerce travelling the bay.

Session 6: Fri. 4:25-5:15 PM, Room I (second floor), **Grade:** ALL GRADES, **Content:** Earth/Space Science, Biology/Life Science, Environmental Science

89. Resources for Teaching the Science of Virginia

Brandi Williams, Matoaca Middle School

The Virginia SOLs require that students learn about watersheds, state geologic history and natural resources, the 5 physical regions and fall line, estuaries and the Chesapeake Bay, and more. Teaching these topics can be daunting for educators who are new to the state. In this session, participants will learn about resources (including PD opportunities, organizations, and curriculum support) that are available to help educators teach these topics confidently.

Session 6: Fri. 4:25-5:15 PM, Room 17 (second floor), **Grade:** ALL GRADES, **Content:** General

90. A Report on the VAST 2022 Rockin' PD

David Matchen, Madison County High School

During the summer of 2022, VAST, VTCA, and FMVA organized visits to four quarries across Virginia. This session will report on those events and include a discussion from the organizers and the participants. Attend the session and hear about last summers events and learn how you can participate in the 2023 quarry tour.

Session 6: Fri. 4:25-5:15 PM, Room J (second floor), **Grade:** MS-HS, **Content:** Biology/Life Science, Environmental Science

91. Reconnect-Recover-Reengage: 3 R's of Interactive Notebooks

Donna Rowlett, Gate City High School

Jinx Rasmussen, Virginia High School

Let's join together and take on the challenges of reengaging students, recovering basic concepts, and implementing more rigorous science and engineering practices. In addition to analyzing different notebook formats, modes of organization, and 'tricks of the trade', attendees will actively engage in activities and take with them lessons and activities ready for classroom implementation. PLEASE, feel free to bring along your favorite notebook activity or page(s) and share with the rest of us!

Session 6: Fri. 4:25-5:15 PM, Room 18 (second floor), **Grade:** ELEM, **Content:** Elementary Science, STEM

92. Elementary Science Teachers Meet Up

Laurie Witt, Albert Harris Elementary School

Welcome to the Elementary Science Teachers Meet Up! Bring your best tried and true ideas to share with other classroom teachers. Bring your questions and challenges to get feedback from colleagues. Bring new ideas and exciting discoveries that you cannot wait to tell everyone about! Whether you teach science or STEM- this is the place for you to make new connections with other teachers from around our great state and beyond!

Session 6: Fri. 4:25-5:15 PM, Room H (second floor), **Grade:** ALL GRADES, **Content:** General

93. Science Saves! Spread the Word!

Christopher Moran, ScienceSaves

Science makes lives better. In innumerable ways and across all of humanity, individual lives are longer, healthier, easier, and fuller due to the advances of science. Yet science gets too little credit for its massive contributions to human wellbeing. Our lessons teach students appreciation for science. They include teacher notes with curriculum standards at the end of each presentation, student response sheets, rubrics, and lesson plan documents. It's all free!

Session 6: Fri. 4:25-5:15 PM, Room 15 (second floor), **Grade:** HS-COL, **Content:** Biology/Life Science

94. Phylogenetic Trees and Differential Gene Expression Analysis

Mark Levy, Roanoke Valley Governor's School

Participants will use public bioinformatics resources from NCBI to complete two guided activities: creation of a phylogenetic tree and analysis of differential gene expression. Participants will require a computer connected to the internet to participate fully.

Session 6: Fri. 4:25-5:15 PM, Room 11 (second floor), **Grade:** HS-COL, **Content:** Biology/Life Science, Environmental Science, STEM

95. STEM Majors in Sustainability, Environment, & Conservation

John Gray Williams, Virginia Tech - College of Natural Resources and Environment

Natural resources rarely come to mind when students hear the term STEM. But when you stop and think, virtually all consumer products, from the most basic to the most innovative, use materials that can ultimately be tied back to a natural resource. Come learn about the "other" STEM majors at Virginia Tech and how you can connect students interested in biology, chemistry, physics, technology, and engineering to career options in the environment, sustainability, and conservation. (Not-For-Profit Exhibitor)

Session 6: Fri. 4:25-5:15 PM, Room 10 (second floor)

96. No presentation

Session 6: Fri. 4:25-5:15 PM, Room 8 (second floor), **Grade:** ALL GRADES, **Content:** Physics/Physical Science, General, STEM

97. Engaging All Learners Proficiently

Jennifer Saleeba, Ferrum Elementary School

Victoria Taylor, Henry Elementary School

This will be an interactive, introduction session to Personalized Competency Based Education, the transformation to PCBE by 2 VA schools, and the PCBE's role in today's student-led classrooms. Past and current assessment practices will be compared, and proficiency scales will be written that allow for student and teacher agency as well as voice, choice, and mastery. Participants will leave with an assessment, grading, feedback, and proficiency scale toolkit.

